



Data Taking

2002 November 8-14

News from the Tevatron

- **Accelerator Studies (5 Shifts: Nov 4-5)**
 - **Tunes:** Adjust machine parameters to increase intensity and/or efficiency
 - **Chromaticity:** Affects the focusing & bending properties of magnets, making them sensitive to particle momentum
- **Record Initial Luminosity - Store 1953 (Nov 8-9)**
 - $DØ = 35.39E30$; $CDF = 37.97E30$; Avg $36.68E30$
- **Record Pbar Stacking - 13.0 mA/hr (Nov 9)**
- **Tevatron Abort Kicker Pre-Fire**
 - **Killed Record store ~20:30 Sat Nov 9**



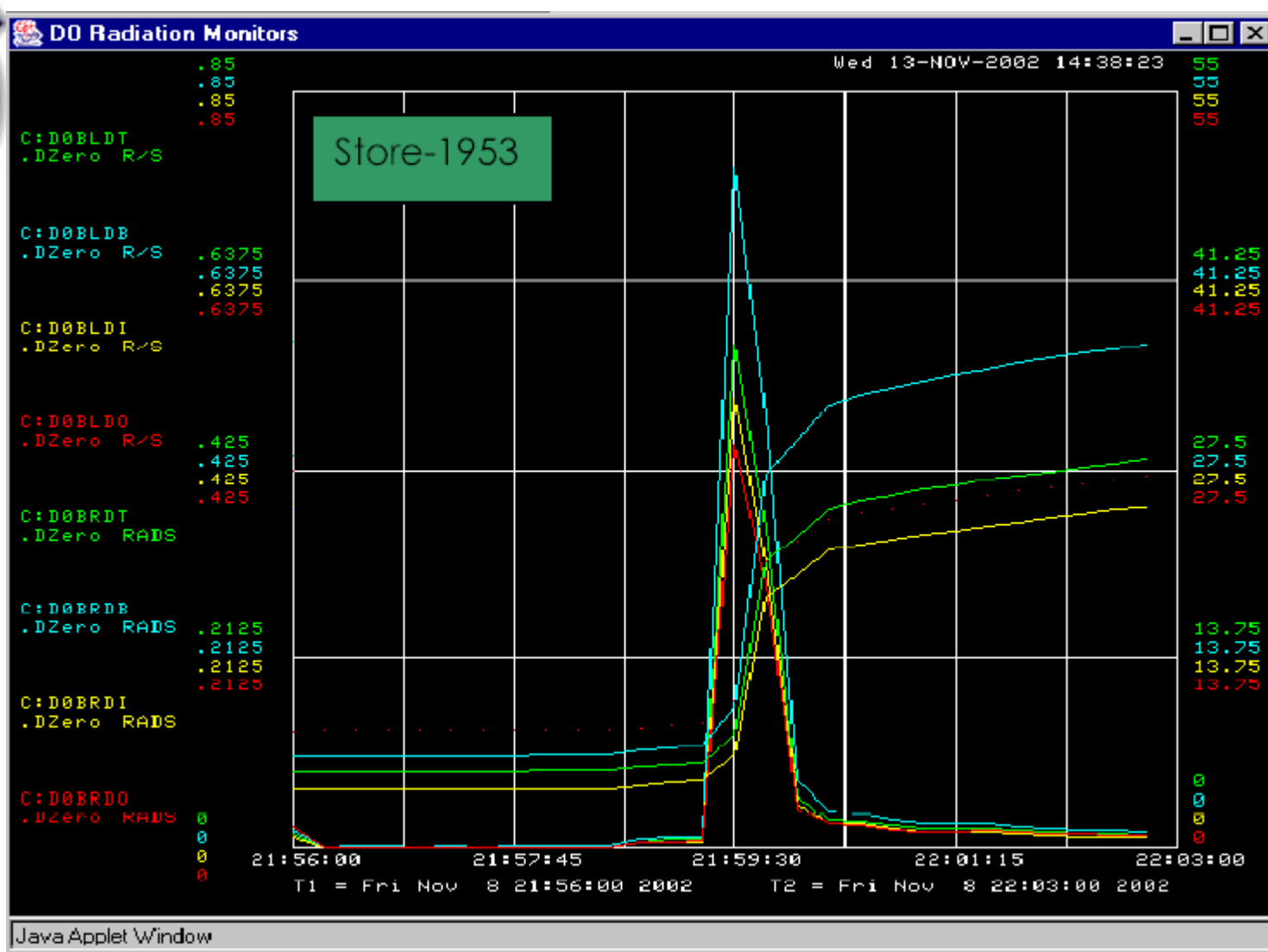
Abort of Store 1953

- Dirty beam abort due to Proton abort kicker magnet pre-fire outside of abort gaps
 - A11 collimator is supposed to absorb dose from protons
 - Maybe some fraction got through
 - Has not happened in a year - no study or statistics available
- DØ was not affected
 - No SMT HV trips or Alarms from Radiation Protection
 - Radiation Monitoring can pick up signal as far as 16 cm away from the beam axis - SMT received NO appreciable radiation
- CDF received an instantaneous dose of 200 Rads
 - Six SVX chips were permanently damaged
 - 6 of 8 L00 Silicon Power Supplies blew fuses
 - Did not re-integrate Silicon until ~17:00 Wednesday (Nov 13)

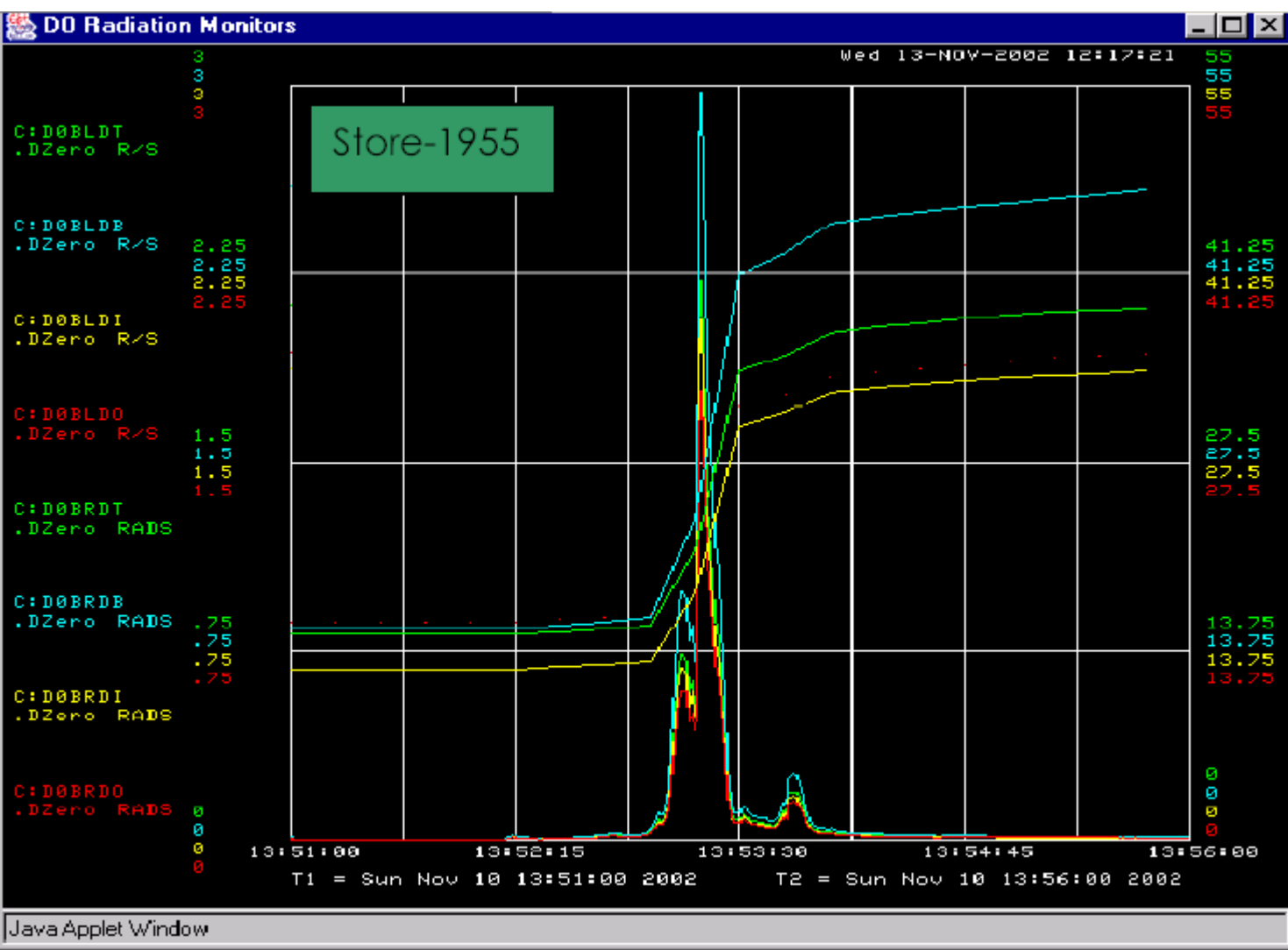


Other News

- Stores 1955 (22 hrs), 1957 (17 hrs), 1961 (25 hrs)
 - Store 1968 went in ~02:00 this morning at 21.7E30
- Controlled Accesses
 - Nov 8th (3 hrs), 11th (0.5 hrs), 12th (3.5 hrs), 13th (1 hr)
 - None charged to DØ - All parasitic to Tevatron or CDF needs
- Silicon Radiation Monitor Alarms
 - Downstream BLMs received ~3-4 rad/s for several seconds during the ramp on shot setups to Stores 1955, 1957, 1961 - brought to the accelerator's attention
 - Alarm triggered at 20 rads in one minute (rolling average)
 - Factor of 3-4 higher than previous stores (including 1953)
 - Accelerator tuned some parameter - seems to be ok now
 - SMT HV is OFF at ramp - concerned about long term



**Record Store: See typical “bump” in dose during the ramp.
 Downstream devices: DOBLxx (Instantaneous) & DOBRxx (Integrated)**



Next Store: Tevatron had changed chromaticity on the ramp.
Downstream devices: D0BLxx (Instantaneous) & D0BRxx (Integrated)



Data Taking Statistics

	nb ⁻¹				Hours				
Date	Del Lumi	Util Lumi	L2/L3 Lost	Rec Lumi	Store	Downtime	Events (k)	Live	Eff.
8-Nov-02	459.6	445.7	5.4	339.0	10.4	0.4	1027	0.786	0.738
9-Nov-02	1353.4	1340.2	14.7	1097.2	20.5	0.2	2196	0.840	0.811
10-Nov-02	874.5	855.7	3.6	695.6	9.8	0.2	1175	0.822	0.795
11-Nov-02	1124.0	828.5	8.3	592.2	17.2	3.0	1607	0.765	0.527
12-Nov-02	713.1	688.8	8.5	502.7	12.0	0.5	1196	0.810	0.705
13-Nov-02	1208.1	1129.9	11.8	878.6	17.0	1.2	1832	0.813	0.727
14-Nov-02	313.3	310.4	1.1	282.6	8.0	0.1	801	0.919	0.902
	6046.0	5599.2	53.4	4387.9	94.9	5.6	9834	0.818	0.726

- **Total Data Taking Efficiency → 72.6% (69.5% week before)**

- 446.8 nb⁻¹ or 7.4% Lost due to Downtime
- 1604.7 nb⁻¹ or 26.5% Lost due to Deadtime
 - Decorrelated (L2/L3/COOR Disables)
 - Correlated (FEB, SkipNextN)
- 53.4 nb⁻¹ or 0.9% Lost at L2/L3

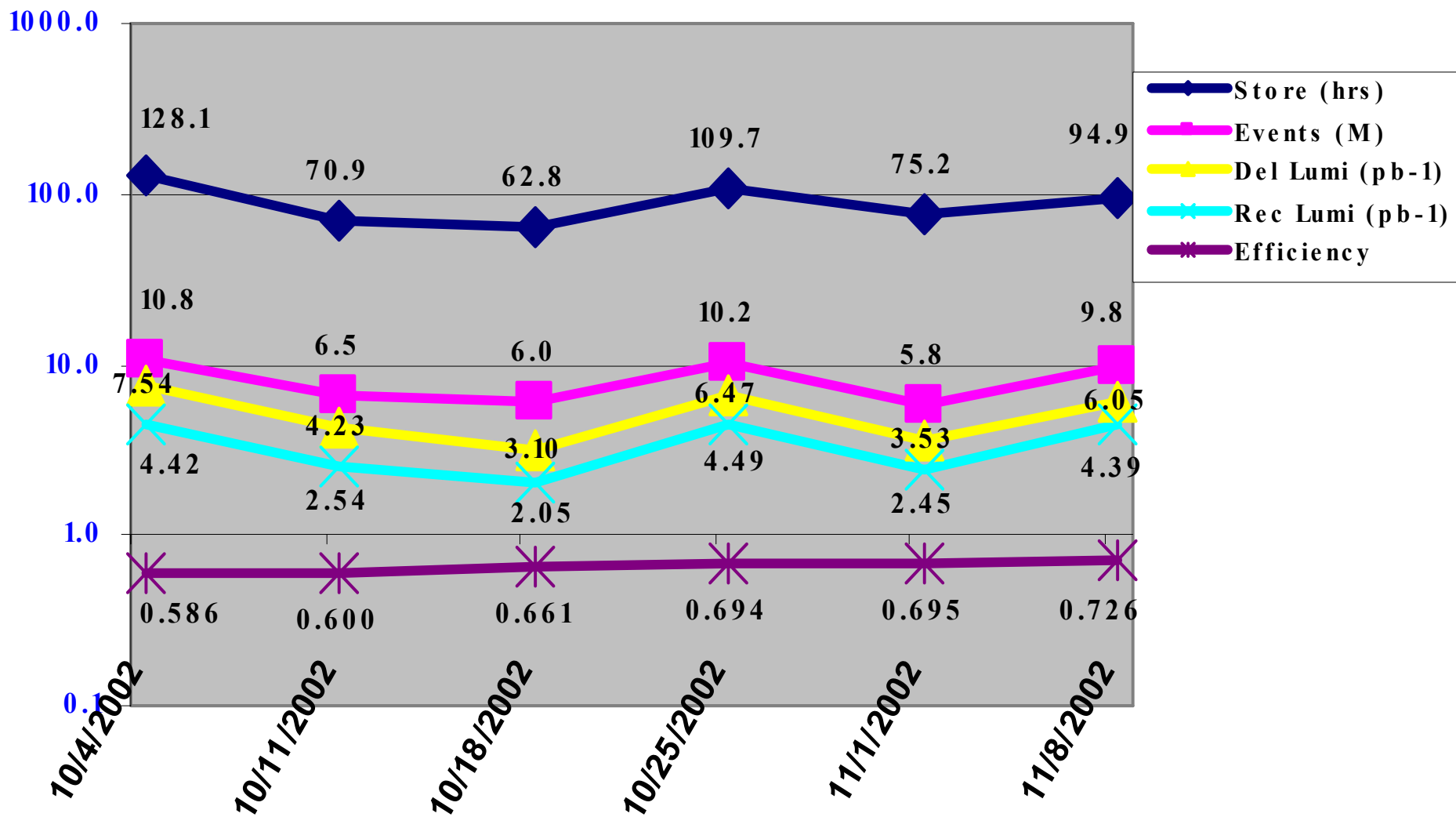
**DØ Data Taking Status
is linked from Run II
Operations Page (xls & htm)**

- **9728 k Events from Physics Runs recorded to tape with global_CMT-9.20 & 106 k with 9.30 (see last slide)**



Six Weeks Data Taking

Using Ops Week Period: Fri-Thu





Sources of Downtime

Nov 8-14, 2002	8-Nov-02	7:50	0.25	Disable SMT HDIs
	11-Nov-02	20:18	1.38	d0olc lost network connection
	12-Nov-02	10:52	0.38	Calorimeter Noisy Study
	13-Nov-02	20:09	0.42	Calorimeter BLS Crate

- **d0olc: Main DAQ machine lost network connection**
 - Handles bulk of event data traffic & is home to key DAQ system applications (including Oracle database)
 - First run of Store 1957 (~1.5 hours) did not end nicely
 - Lumi is not currently registered
 - Took ~1.5 hours for DAQ system to fully recover & start new run
- **Calorimeter BLS power supply tripped**
 - Midway through Store 1961 - Run 168030 w/o crate x40
 - Fixed on access Thursday morning - blown cap on BLS board
- **Special Run to study noise production with beam**
 - Stripped zero bias events to provide MC overlay



Sources of Deadtime

- Still losing 25-30% of our luminosity every day
 - **daqAI is getting more sophisticated**
 - More inputs from Muon this week
 - Reports are getting more informative
 - Still need to define more of the 'Other' Problems

Date Saved: Friday, November 15, 2002 8:00:01 AM CST

Keyword(s): :DAQAI_REPORT:SHIFT REPORT:

Shift report for covering the period 2002-11-15-00:00:00 to 2002-11-15-08:00:00

Problem 'Crate 0x45 is FEB' - 1 times, took average of 32 seconds (total time 00:00:32).

Problem 'Crate 0x47 is FEB' - 1 times, took average of 101 seconds (total time 00:01:41).

Problem 'Crate 0x48 is FEB' - 1 times, took average of 87 seconds (total time 00:01:27).

Problem 'Crate 0x49 is FEB' - 1 times, took average of 18 seconds (total time 00:00:18).

Problem 'L2 Crate 0x22 lost sync' - 3 times, took average of 37.6667 seconds (total time 00:01:53).

Problem 'Other' happened 33 times, and took an average of 72.5758 seconds (total time 00:39:55).

Timer in_store: 05:56:51 (on)

Timer daq_configured: 05:40:15 (on) - 95.3482% of in_store

Timer good_data_flow_to_l3: 05:11:04 (on) - 87.1701% of in_store



DØ Initial Luminosities

Highest

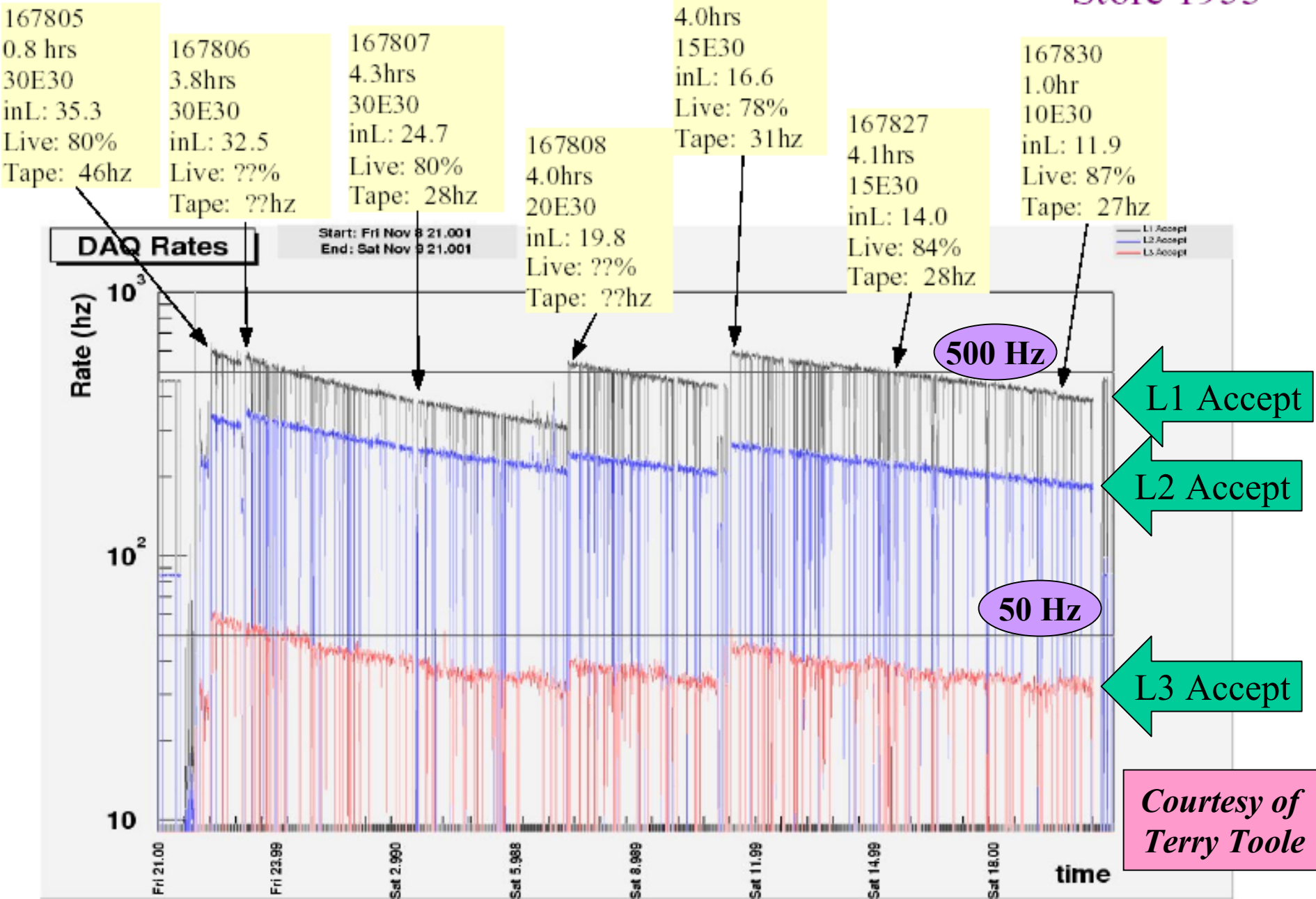
• DØ Record Initial Luminosities

- 06 Jul 2002 - Store 1499 - 19.90E30
- 25 Jul 2002 - Store 1580 - 20.77E30
- 26 Jul 2002 - Store 1583 - 24.79E30
- 21 Sep 2002 - Store 1775 - 27.03E30
- 24 Sep 2002 - Store 1787 - 28.30E30
- 07 Oct 2002 - Store 1832 - 29.00E30
- 08 Oct 2002 - Store 1834 - 32.29E30
- 09 Oct 2002 - Store 1836 - 34.50E30
- **08 Nov 2002 - Store 1953 - 35.39E30**

Initial Lumi (E30)	Store	Start Time	End Time
NEW 35.39	1953	2002 Nov 08 22:15	2002 Nov 09 20:32
NEW 34.80	1955	2002 Nov 10 14:12	2002 Nov 11 12:04
34.50	1836	2002 Oct 09 08:50	2002 Oct 10 05:20
33.56	1843	2002 Oct 12 20:53	2002 Oct 13 01:08
33.40	1886	2002 Oct 19 22:59	2002 Oct 20 20:55
NEW 32.64	1961	2002 Nov 13 07:01	2002 Nov 14 07:58
32.29	1834	2002 Oct 08 11:17	2002 Oct 09 03:23
32.23	1921	2002 Oct 29 12:16	2002 Oct 30 12:58
NEW 31.96	1957	2002 Nov 11 18:49	2002 Nov 12 11:58
31.96	1865	2002 Oct 17 11:14	2002 Oct 17 20:59
31.24	1841	2002 Oct 11 16:27	2002 Oct 12 14:58
30.88	1918	2002 Oct 28 13:16	2002 Oct 29 07:38
29.95	1845	2002 Oct 14 05:14	2002 Oct 14 14:22
29.84	1908	2002 Oct 26 08:36	2002 Oct 26 14:48
29.50	1839	2002 Oct 10 14:18	2002 Oct 11 09:11
29.00	1832	2002 Oct 07 16:05	2002 Oct 08 07:39
28.31	1916	2002 Oct 27 16:31	2002 Oct 28 10:03
28.30	1787	2002 Sep 24 06:14	2002 Sep 25 00:10

All of the Best Stores have
been in the past
6 weeks!

Including four in a row...

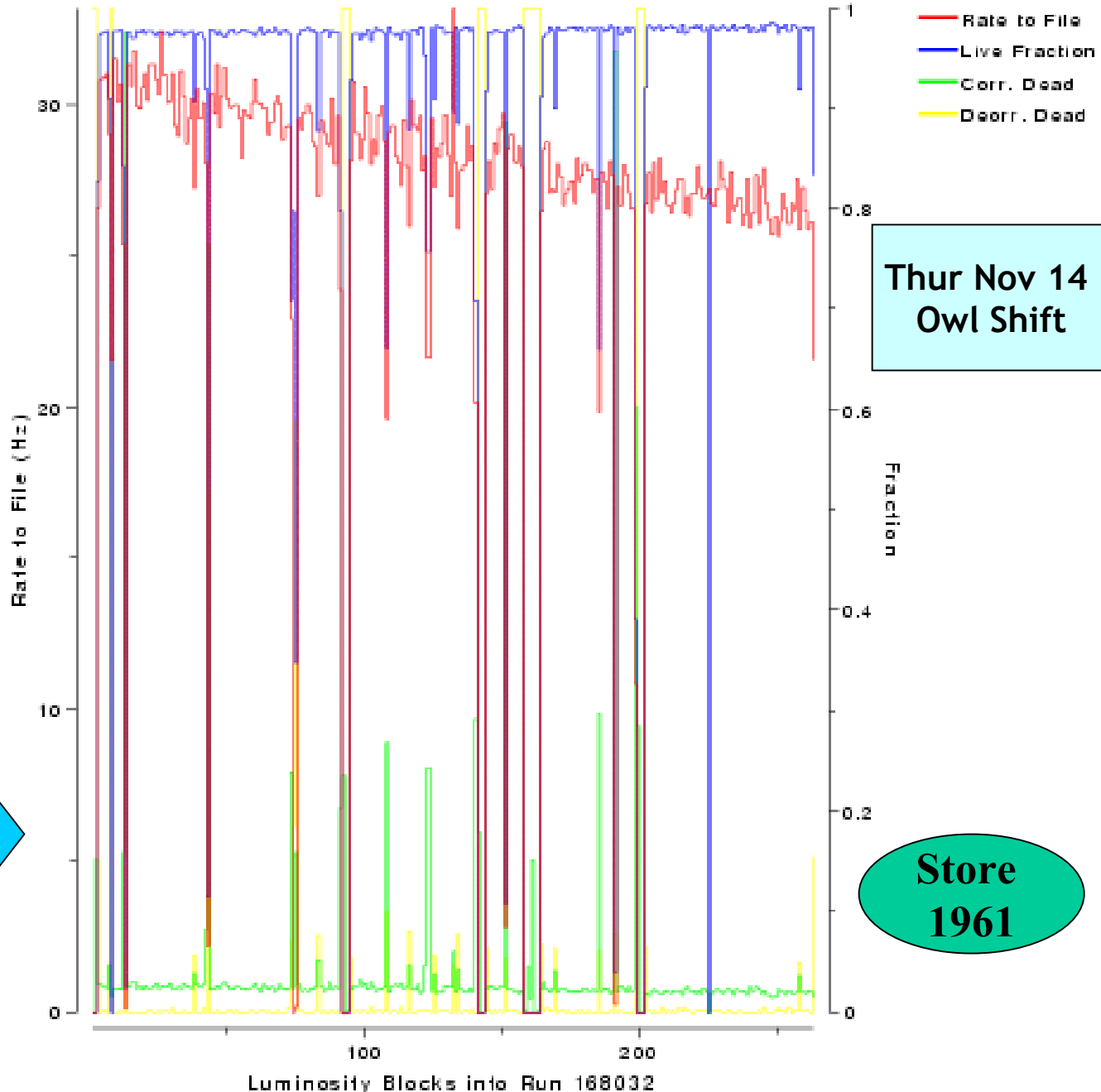




L1/L2/L3~420/210/31

**Best 4 hour
Run in
3 months**

168032
inL=11.57
4.1 hrs
400k Evt
Live: 91.4%
22 SCLinit
3 Pauses

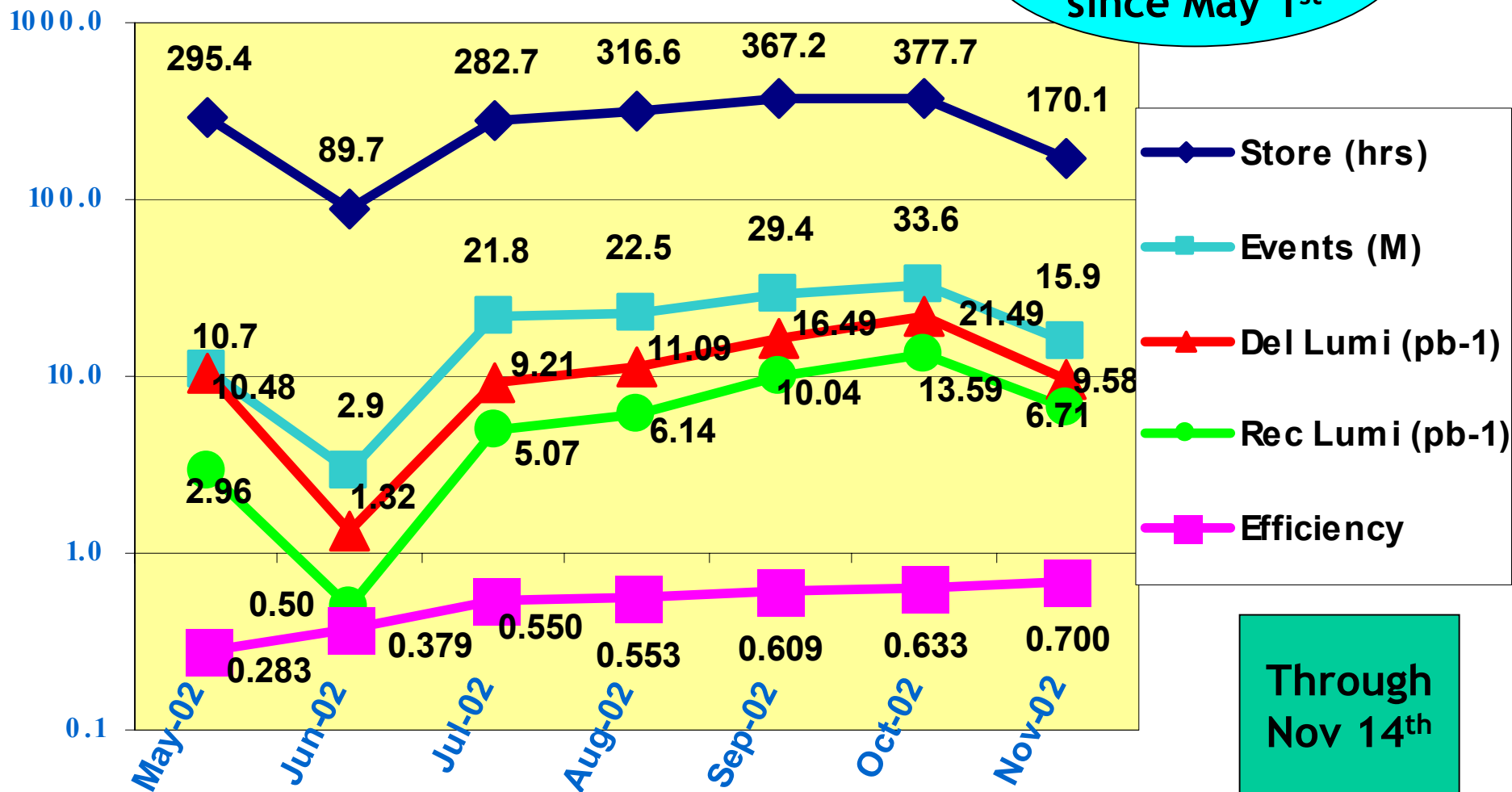




6+ Months Data Taking

CFT Fully Instrumented April 19th

60.8%
Efficiency
since May 1st

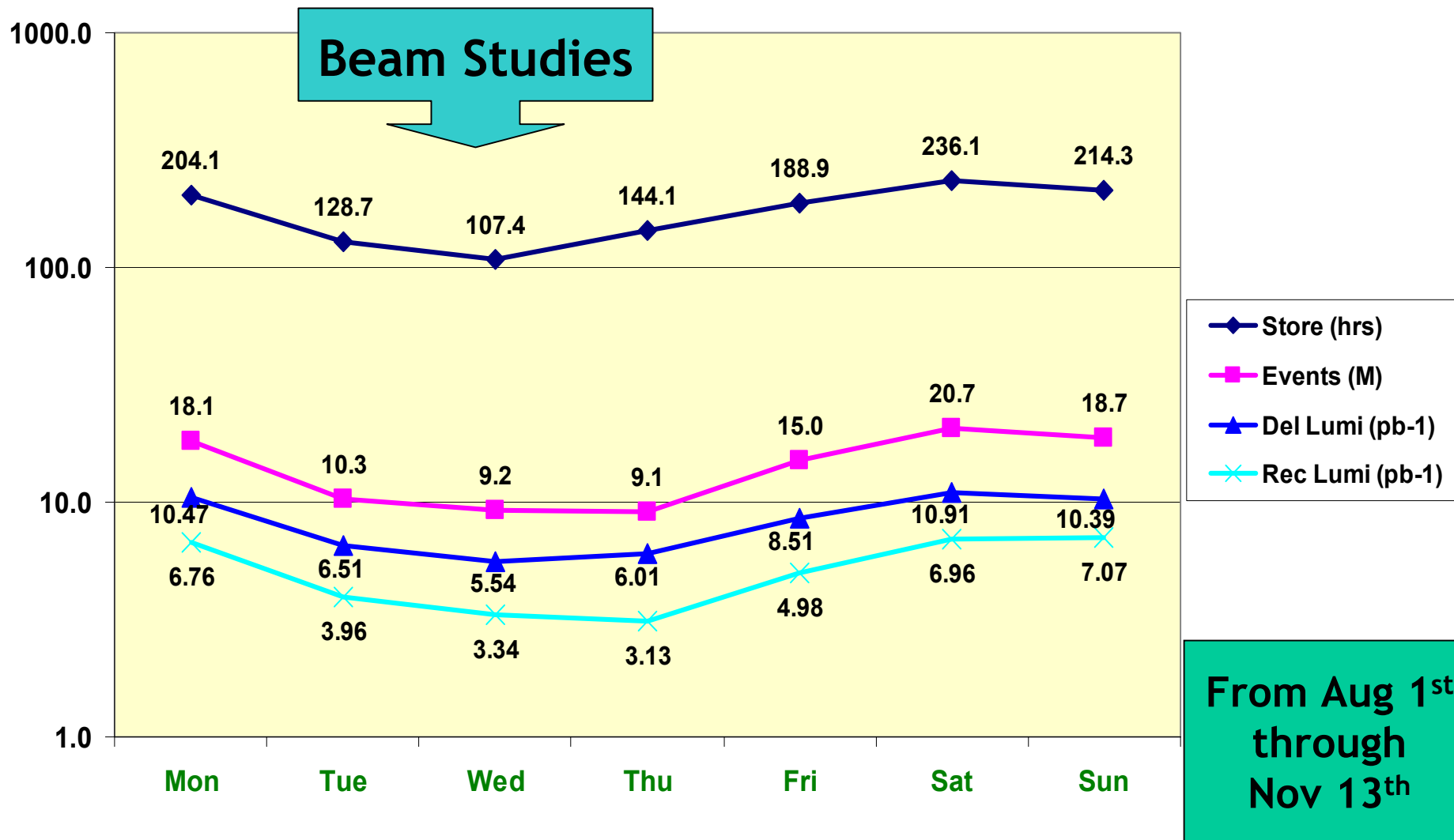


Through
Nov 14th



Daily Data Taking

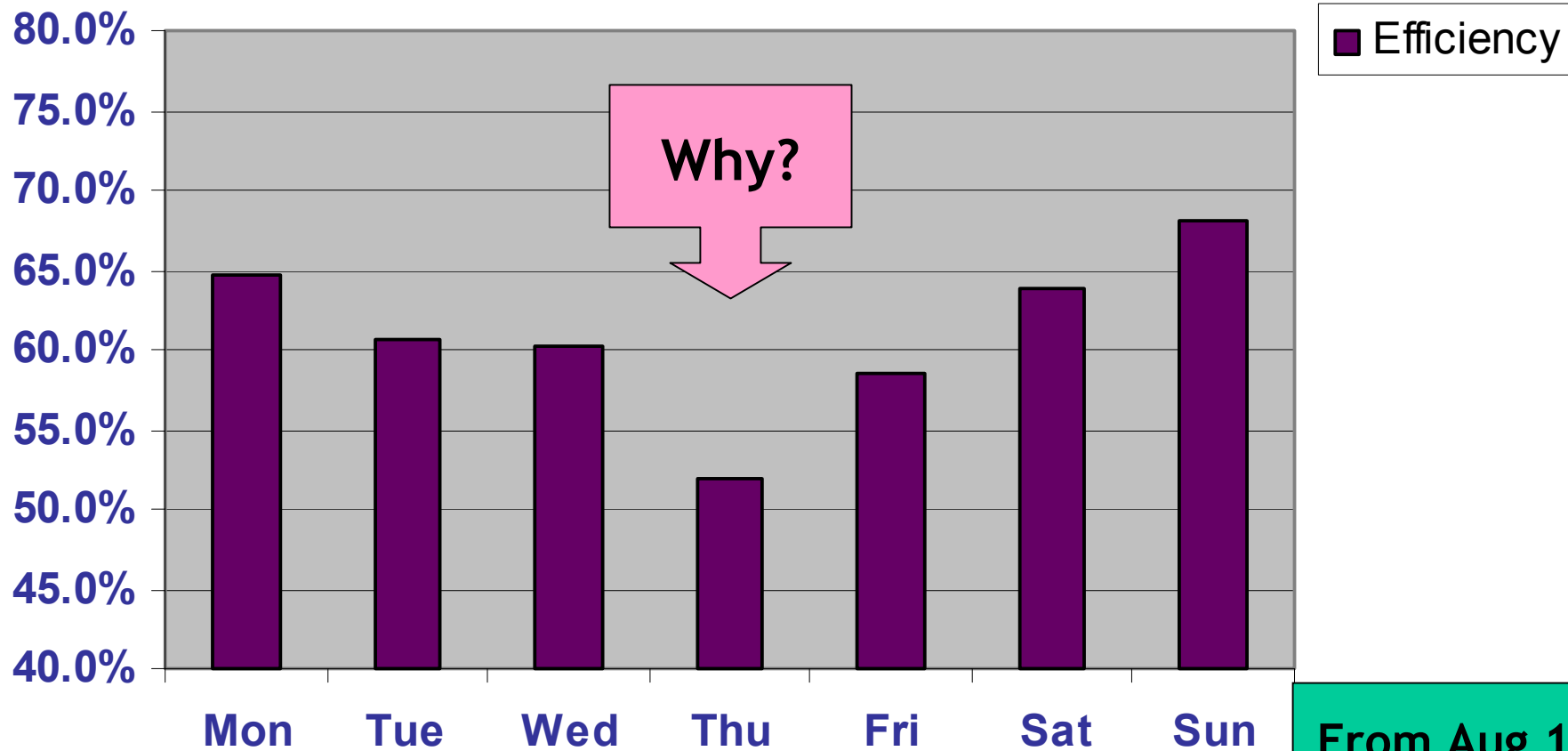
Does it Matter What Day of the Week it is?





Daily Data Taking

It Does Matter...



From Aug 1st
through
Nov 13th



Plans for Upcoming Week

- **New trigger list: global_CMT-9.30**
 - Tested during Store 1961 (~1 hr on Wed Nov 13th) - Run 168028
 - Prime time with Store 1968 (Fri Nov 15th) - Run 168132 & up
- **Peak L1/L2/L3 rates ~ 600/250/50 Hz**
 - Stress stability instead of rate
 - Major Issue: Muon readout errors still not understood
 - But there are about a dozen experts working on monitoring & debugging, with effort coordinated by Dmitri
- **Priority: Continued Commissioning of Trigger**
 - L1 CTT, L1 Muon, L1 CAL, L2 STT
- **Stack 'N Store through Mon Owl Nov 18th**
- **Beam Studies Nov 18 (day,eve) & 19 (owl,day,eve)**
 - ~8 hour access on Wed Nov 20 (start 06:00)
- **Stack 'N Store Nov 21-Dec 3**

This schedule assumes good stores all weekend